

REDISCOVERY OF THE SELVA CACIQUE (*CACICUS KOEPCKEAE*) IN SOUTHEASTERN PERU WITH NOTES ON HABITAT, VOICE, AND NEST

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ABSTRACT.—Two new locations, vocalizations, and the nest of the little known Selva Cacique (*Cacicus koepckeae*, Icteridae) are described from southeastern Peru. Similarities between the vocalizations of Selva and Ecuadorian caciques (*C. sclateri*) indicate that the two species may be closely related. The Selva Cacique may be ecologically restricted to narrow rivers and headwater regions, where found in river margin habitats and nearby transitional forest. Its occurrence from an elevation of 300 m at the type locality to ≤ 575 m at the headwaters of the Río Manu Chico, 240 km from the type locality, indicates that it may occur in small numbers over a much larger area than was previously known. Received 29 July 2002, accepted 11 March 2004.

Until recently, the Selva Cacique (*Cacicus koepckeae*) was known from only two specimens collected at the type locality: Balta ($10^{\circ} 08' S$, $71^{\circ} 13' W$; elevation 300 m), on the Río Curanja, Depto. Ucayali, Peru (Lowery and O'Neill 1965). Here, I report two new localities for the species in southeastern Peru, and provide the first description of its voice and nest.

STUDY AREA AND METHODS

Between 27 March and 20 April 1998, I observed 1–4 *C. koepckeae* seven times in the vicinity of the Nanti village of Montetoni ($11^{\circ} 54' S$, $72^{\circ} 21' W$; elevation 550 m) on the upper Río Camisea, Depto. Cusco, and on the nearby Río Manu Chico, Depto. Madre de Dios, Peru (Fig. 1). On 1 October 1998, I observed a pair of birds near the Río Shihuaniro, a tributary of the Río Timpía, in the Matsigenka (Machiguenga) community of Timpía ($12^{\circ} 04' S$, $72^{\circ} 49' W$; elevation 410 m) on the lower Río Urubamba, Depto. Cusco, Peru. I observed groups of 2–5 birds several times at this and other nearby sites on the Río Shihuaniro in Timpía on 23 October 1999, 16–17 May 2000, and 27–28 July 2001. All of these sightings were along narrow tributaries, but on 24 and 29 July 2001 I observed a pair of Selva Caciques visiting flowering *Erythrina* (Leguminosae) trees along the main course of the lower Río Urubamba across from the ecotourism lodge of the Machiguenga Center for Tropical Studies in Timpía. I used a modified

Sony TCM-5000EV tape recorder and a Sennheiser short-shotgun microphone (model #ME66 with K6 powering module) to record vocalizations.

RESULTS AND DISCUSSION

Field identification.—*C. koepckeae* is distinctive, and its pattern of coloration—all black with a yellow rump—is striking. In this region of Peru, no other birds resemble it. The sympatric Yellow-rumped Cacique (*C. cela*) shows much more yellow on the rump, tail, and wings. Like *C. cela*, *C. koepckeae* has a light-colored bill and a bluish eye. The bill of *C. koepckeae* is grayish white and small for an icterid, imparting a small-headed look relative to the long, strong-headed appearance of *C. cela* (especially the male). *C. koepckeae* (23 cm) is slightly smaller than *C. cela* (23–29.5 cm; Ridgely and Tudor 1989).

Vocalizations.—On 11 April 1998, 09:00 EST, I made the first known recordings of *C. koepckeae* vocalizations near the Río Manu Chico, elevation 575 m, Manu National Park, just across the Isthmus of Fitzcarrald from the village of Montetoni on the upper Río Camisea (LNS #96000; see track 93 of Schulenberg et al. 2000). One bird vocalized while 3–4 individuals moved through the canopy of a predominantly *Cecropia* (Moraceae) riverine forest grove along an old, overgrown, dry river course. I recorded 20 sec of vocalizations before playback and 35 sec after playback.

The vocalization I recorded was a rapid series of loud, quick, explosive, paired notes: *chick-pouw*. In my analysis, each burst of sound constituted a note. Isler et al. (1998:

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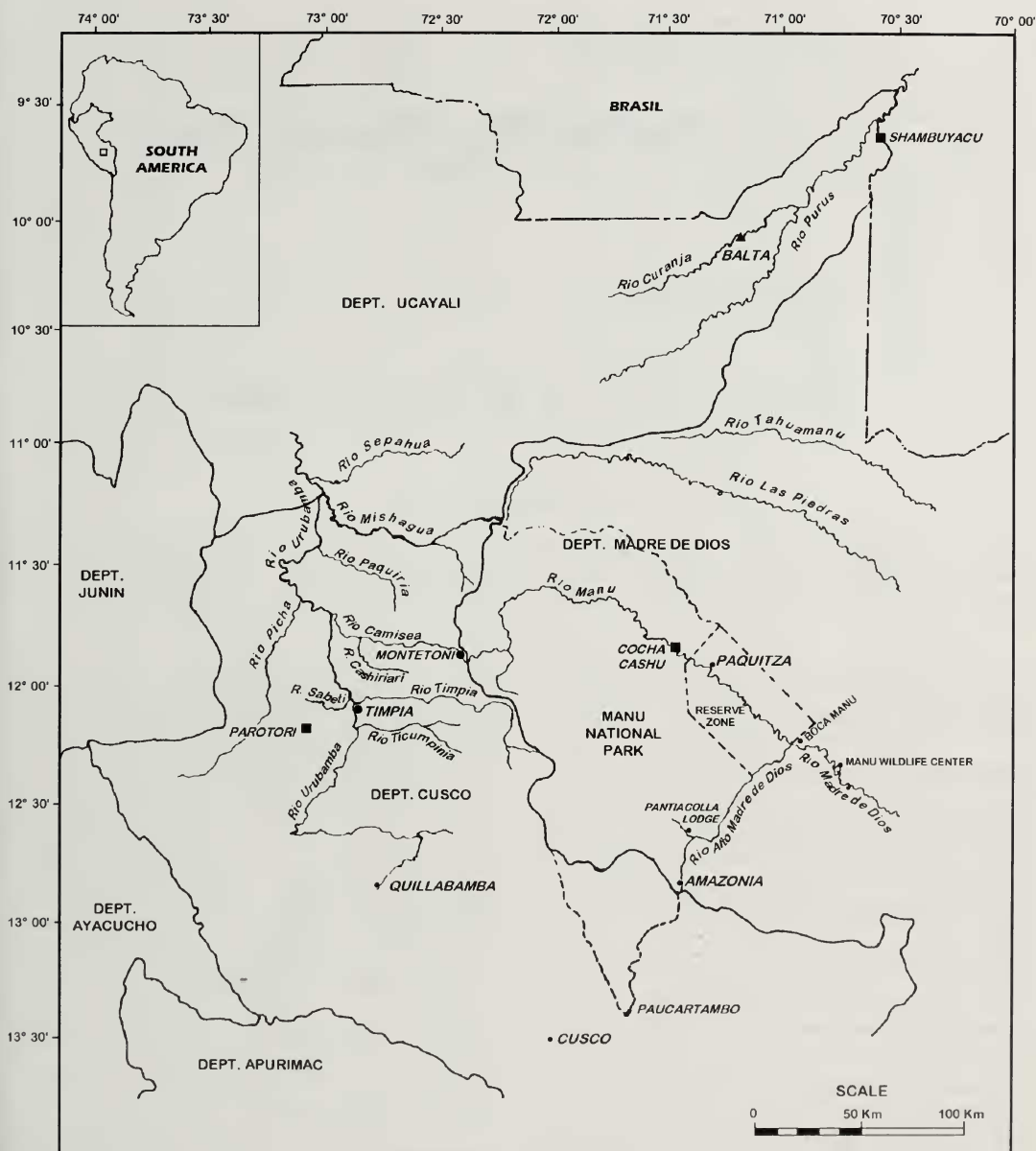


FIG. 1. Map of southeastern Peru showing the location of the type locality (Balta, solid triangle), the author's two new locations for *Cacicus koepckeae* (Montetoni and Timpia, solid circles), and other observers' recent encounters (Parotori, Cocha Cashu, and Shambuyacu, solid squares). Inset at upper left shows approximate location within Peru of the center of the enlarged map.

580) defined a note as "an unbroken trace on a spectrogram, including associated overtones." Paired notes were separated from each other by brief pauses and formed musical phrases, which may be repeated one or more times (Fig. 2). Before playback, the two-note phrases were given at about 1/sec for 20 sec

before the first noticeable pause. Following playback, the pace was slower—about one *chick-pouw* phrase every 2 sec for 35 sec. In both cases, the series began with 2–3 lone *chick* notes before the first two-note phrase. Before playback, several three-note *chick-pouw-pouw* phrases were interspersed in the

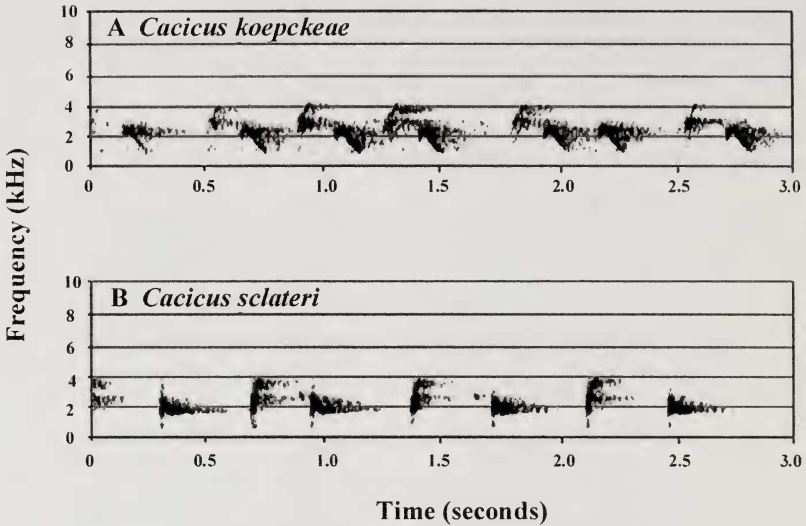


FIG. 2. Sound spectrograms of vocalizations of (A) *Cacicus koepckeae* (from the Río Manu Chico, south-eastern Peru; recorded before playback by N. Gerhart; LNS 96000) and (B) *Cacicus sclateri* (from the Kapawi Ecological Reserve, Río Pastaza, southeastern Ecuador; recorded before playback by J. Moore).

series of two-note phrases, but this only occurred once after playback.

On 1 October 1998, I recorded a pair on the Río Shihuaniro at about 09:00, when the birds vocalized from the canopy of river margin vegetation at a height of 5–8 m (LNS #96001). The rhythm of the vocalizations in this encounter was slightly different. Phrases were slower, more widely spaced, and not given in a long series: *chih-chih, pouw-pouw*. The sharp *chih* notes were given in quick succession, followed by a brief pause; the two *pouw* notes were given more slowly and less forcefully. One 14-sec sequence of the pair contained six phrases, with the birds loosely alternating phrases as they moved away. Only two of the six phrases were complete four-note phrases. Three shorter *chih-chih, pouw* phrases and one phrase with only the two loud, introductory notes were interspersed among the complete phrases. Long recordings (2 min 46 sec before playback and 29 sec after playback) of a single bird at a different site on the Río Shihuaniro on 17 May 2000 showed similar variations; at times, the cadence was similar to that in each of the original two recordings made in 1998.

These vocalizations of *C. koepckeae* are similar to one of the vocalizations of *C. sclateri*, the Ecuadorian Cacique, recorded by

Moore (1997) during September 1996 at Kapawi Lodge, Río Pastaza, in eastern Ecuador. Seven two-note *chick-kuh* phrases of *C. sclateri* were similar in pitch and quality to the *chick-pouw* phrase given by *C. koepckeae*. The first note of this *C. sclateri* vocalization is almost identical to the first note of *C. koepckeae*'s vocalization, with the second note only slightly shorter and sounding more clipped. The explosive quality and speed of the vocalizations of *C. sclateri* are also similar to those of *C. koepckeae*. Servat and Pearson (1991:94) described the vocalizations of *C. sclateri* as a "ringing song, peé-chur, peé-chur, peé-chur, chur-chur-chur."

Comparison of the last 2.5 sec of the sound spectrograms in Fig. 2 shows that *C. koepckeae* gives 11 notes, whereas *C. sclateri* gives 6. *C. koepckeae*'s pace is 4.4 notes/sec, whereas that of *C. sclateri* is 2.4 notes/sec. *C. koepckeae* changes the rhythm of its vocalization from a two- to a three-note phrase once during the series, whereas *C. sclateri* does not. Nevertheless, the basic two-note structure of both vocalizations is similar. Both vocalizations contain a steady and narrow range of frequencies. The F-shaped first note of both species is similar in shape and almost identical in frequency. The second note of the *C. koep-*

ckeae phrase is heavily down-slurred, giving it a longer, fuller, less clipped sound.

These vocal similarities suggest a close taxonomic relationship between *C. sclateri* and *C. koepckeae* (see below). The principal vocalizations of other caciques that could be closely related are substantially different from those of *C. koepckeae* and *C. sclateri*. For example, when not mimicking other species, *C. cela* typically gives a loud, variable four-syllable song beginning with a strong screech. *C. cela*'s frequent call note is a loud *tchak*. The Solitary Cacique (*C. solitarius*) gives a varied assortment of loud, whiney, squealing calls, but two of its most often-heard songs in southeastern Peru are (1) a series of low *whup* notes followed by a high *TEE-O*, and (2) a loud, piercing series of high *TEW* notes, sometimes preceded by a softer, low growl. The Southern Mountain-Cacique (*C. chrysonotus*; Ridgely and Greenfield 2001) gives a variety of loud, jay-like calls. Often one bird repeats these harsh notes while another duets with a descending whistle. The principal song of the Golden-winged Cacique (*C. chrysopterus*) is a high, loud *WHEEO* note, sometimes doubled, and preceded by several lower *glo-glo* notes. Its call is a catbird-like *wreyur* (Ridgely and Tudor 1989).

The vocalizations of *C. koepckeae* appear to lack the variability of those of *C. cela*, *C. solitarius*, and *C. chrysonotus*. The primary *chick-pouw* paired notes constituted all *C. koepckeae* vocalizations heard and recorded before 27–28 July 2001, when I recorded a different vocalization from one or both members of a pair disturbed by tape playback of the primary vocalization recorded along the upper Río Shihuaniro in Timpía. The new vocalization, reminiscent of some sounds made by *C. solitarius*, consisted of two consecutive mournful, downslurred, high-pitched whines, together lasting about 1.5 sec.

Habitat and behavior.—J. P. O'Neill (Ridgely and Tudor 1989:372) posited that *C. koepckeae* was likely "an arboreal bird occurring mostly at forest borders." T. A. Parker, III, reported that it "appears to be restricted to riverine habitats in the region" (Collar et al. 1992:961). My recent observations support those ideas. None of my encounters was far from river margin habitats, and the species

was never heard or seen inside continuous high ground, or *terra firme*, forest.

C. koepckeae's preferred habitat, at foothill elevations close to the eastern slope of the Peruvian Andes, is the transitional forest that lines narrow, high-gradient rivers such as the Ríos Shihuaniro, Manu Chico, and upper Camisea. In addition to the 17 sightings of *C. koepckeae*, I heard it 10 times without seeing it, for a total of 27 encounters. All 27 encounters were in river margin habitats, including *Gynerium* (Graminae) canebrakes, or in transitional forest near rivers. Nine of the 17 sightings of *C. koepckeae* (including almost all of the earliest sightings near Montetoni) have been of birds either perched in, or moving through, the canopy of river margin forest in areas where braided channels or dry river courses create a patchy distribution of river margin vegetation types. Six other sightings have been of pairs foraging along or flying across unbraided sections of the upper Ríos Camisea and Shihuaniro, plus two sightings of birds foraging in transitional forest along an unbraided (wider) portion of the lower Río Urubamba in Timpía.

The dry river courses, side branches, and braids (referred to as *otségoa* by local residents) of these narrow, high-gradient rivers carve up the river margin forests into a patchwork of successional habitats of varying ages and structures, forming the preferred habitat for *C. koepckeae*. The structure and distribution of *otségoa* habitat are spatially and temporally variable. Although these *otségoa* often fill during the rainy season and retain pools of standing water during the dry season, many are partially or fully overgrown with successional species such as *Cecropia*, *Balsa* (Bombacaceae), and *Gynerium*. In some cases, established groves of riverine forest shade an open understory scraped clean by rainy-season floods, but the understory can also be overgrown with dense, viney, rank vegetation.

In places, *otségoa* forests are similar in structure to the well-known primary successional habitats described from the Manu Biosphere Reserve area (Terborgh et al. 1984). Nevertheless, they are more heterogeneous and patchily distributed than the *Gynerium* canebrakes and transitional forest habitat types familiar to observers along the wider Manu and Madre de Dios rivers. *Otségoa* for-

ests seem to predominate at slightly higher elevations closer to the Andes, where *Ficus* (Moraceae), *Cedrela* (Meliaceae), and *Erythrina* species are less prominent members of the canopy tree community than in the transitional forests along lowland, meandering rivers, such as the middle and lower Manu. *Gynerium* cane is a common element in the understory of *otségoa* forests, and often forms isolated patches between rocky river beds; it does not tend to occur in the broader, more homogeneous stands referred to as the *zabolo* habitat type by Terborgh et al. (1984). In some places, patches of *Guadua* (Graminae) bamboo are also found in the understory of *otségoa* forests. *C. koepckeae* has been observed using these areas, even perching in bamboo, but it ranges throughout *otségoa* forests rather than being restricted to bamboo patches within them.

Four of the 17 sightings occurred 13–20 April 1998 at a *Gynerium*-dominated island in the middle of a dry river course (*otségoa*) on the upper Río Camisea, downstream of the village of Montetoni. In each encounter, a pair of birds flew to the island between 17:30 and 18:00 from the transitional forest that lined the dry river course and perched at the tip of the tallest *Balsa* sapling on the island before hopping down out of sight to roost. Playback of the vocalizations recorded on 11 April 1998 would sometimes draw one or both individuals across one arm of the dry river course, providing me with excellent views. Once they reached the island for the night, the pair did not vocalize more than once or twice, even in response to playback.

Between 06:50 and 07:04 on 23 October 1999 at the Río Shihuaniro in Timpía, I observed 1–5 individuals in four situations in the crowns of transitional river margin forest. This spot, where I also saw and recorded a pair of birds on 1 October 1998, is about 11 km up the Río Shihuaniro from the main population center of the Timpía community on the lower Río Urubamba. A single bird sunned and preened about 10 m above ground on top of a broken trunk that emerged from the rank vegetation of a small, partially overgrown side channel (*otségoa*) along the main river. Three more birds emerged, presumably from the dense undergrowth, and the four birds gathered 10 m above ground in the top of a tree

in the *otségoa* forest. They moved to the open crown of a 15- to 20-m-tall *Erythrina* tree that was just starting to leaf out, and appeared to probe along the bare branches from which hung some dry seed pods. They hopped between perches, staying mostly in the crown's outer branches. They then moved to a female (red) *Triplaris* (Polygonaceae) tree with drying, brown seed pods, about 15 m above ground. Five birds actively foraged in the clumps of dry pods by hanging in, and climbing through, the clumps. Because I made these observations with 10× binoculars from 50 to 150 m away, I could not determine whether the birds were taking insects or nectar, or probing in open seed pods. Nevertheless, they did not take fruit from an adjacent tree.

During the early morning hours of 28 July 2001, on the upper Río Shihuaniro, I observed repeatedly a pair of *C. koepckeae* visiting a flowering *Erythrina* tree to take nectar. In each of several visits, the birds would arrive together, visit clumps of flowers mostly in the outer branches, and never stay more than a few minutes. On 24 and 29 July 2001, at 16:15 and 15:00, respectively, I observed a pair of *C. koepckeae* foraging in a group of *Erythrina* trees in full bloom, alongside the main course of the lower Urubamba River. Heard and seen on both occasions on the bank opposite from the ecotourism lodge of the Machiguenga Center for Tropical Studies, the pair took nectar from several trees before moving on. They did not linger in any one tree as *C. cela* and other large icterids often do in *Erythrina* trees in full bloom. Although the species is largely restricted to narrower rivers and headwater regions, my two sightings along the main course of the lower Río Urubamba indicate that *C. koepckeae* may visit other transitional and riverine forest habitats opportunistically to take advantage of seasonally available nectar resources, especially rich patches of flowering *Erythrina* trees.

My observations from the Río Shihuaniro suggest that pairs or family groups of *C. koepckeae* start their morning foraging slowly, sunning and preening, and then become more active, and perhaps more vocal, as they move to denser vegetation. My experiences with birds heard along the Río Shihuaniro indicate that response to playback is variable at short range and minimal at long range. A pair re-

sponding to close playback on the Río Shihuaniro on 16 May 2000 remained silent, but readily moved across the river twice, perching in the open 4–15 m above ground in the crowns of riverside trees and bamboo. At the same spot on 27 July 2001, what was presumably the same pair also drew nearer and then crossed the river several times in response to playback. The pair had been actively vocalizing when encountered, and responded to playback with a series of *chick-pouw* vocalizations, eventually giving the disturbed vocalization and a rapid series of *chih-chih-pouw-pouw* phrases after repeated playback.

It appears that foraging pairs or small groups of birds range through the canopy of transitional forest throughout the middle of the day, with foraging concentrated in the early morning and late afternoon. In my experience, *C. koepckeae* moves rather steadily through its preferred habitat, vocalizing only occasionally. In one case, it roosted with colonial icterids, such as Olive Oropendola (*Psarocolius yuracares*), Russet-backed Oropendola (*P. angustifrons*), and Crested Oropendola (*P. decumanus*). A Matsigenka resident of Timpía noted that *C. koepckeae* seasonally fed at the white flowers of an *Inga* sp. (Leguminosae) growing near the Río Shihuaniro. *C. koepckeae* should be looked for around the patchily concentrated nectar resources such as *Erythrina* and *Inga* trees, and possibly *Mucuna* sp. (Leguminosae) vines, which are visited by other icterids.

Nest.—On 28 July 2001, along a braided section of the upper Río Shihuaniro, I observed an active nest of *C. koepckeae* for about an hour. The solitary nest was hanging from the tip of one of the lowest branches, 15–18 m above ground in a mature, 28- to 30-m-tall *Erythrina* tree growing within 10 m of the river bank. I estimated the nest to be 50–70 cm in length. It resembled the pendant nest of *P. angustifrons*, but appeared shorter and slimmer. It was constructed of woven plant fibers that formed a tear-drop shape, had a top entrance, and hung from a long, thin “tail” like the nest of *P. angustifrons*. A (presumably) adult *C. koepckeae* came to the nest about every 5 min, but in one instance it made as many as three visits in a 6-min period. I could not tell what it was bringing to the nest, but each time it entered the nest it stayed in-

side the chamber for 5–70 sec. Several Crested Oropendolas were building nests on the other side of the same tree.

On 16 May 2000, at separate sites along the Río Shihuaniro, I observed two old, inactive nests of similar shape and dimensions that were reported by a local resident to be nests of *C. koepckeae*. Each nest was situated 5–6 m above ground in 12- to 15-m-tall trees, hanging near the end of a branchlet off a main lateral branch. The trees were within 5 m of the river bank, and one nest almost hung over the water. In each case, as with the active nest, the tree’s crown stood alone, away from other crowns. At all three sites, transitional forest with a broken canopy lined the Río Shihuaniro. At two of the sites, the understory was a dense, young stand of *Guadua* bamboo. A local resident said that *C. koepckeae* never nested in colonies with the oropendolas or with *C. cela*, but that it nested at around the same time of year (during the June to November dry season).

Taxonomic relationships.—Although precise relationships within this genus are not known (Lanyon and Omland 1999), similarities in vocalizations, habitat, and behavior support the hypothesis that *C. koepckeae* and *C. sclateri* are closely related, considered by some to be “sister species” (T. A. Parker in Cardiff and Remsen 1994). In addition to its vocal similarities, the all-black *C. sclateri* is also almost identical to *C. koepckeae* in size and morphological structure, and it has a similar lowland Amazonian distribution (Cardiff and Remsen 1994). Based primarily on plumage characteristics, Lowery and O’Neill (1965) originally proposed that *C. chrysopterus* was *C. koepckeae*’s closest relative; structural differences in the tail, feet, and bill were mentioned but not considered diagnostic. J. P. O’Neill (Jaramillo and Burke 1999) now considers this early idea to be in error. Other black and yellow caciques that could be closely related include the similarly plumaged *C. chrysonotus*, which occurs in temperate Andean forest in southeastern Peru (principally at 1,800–3,000 m); *C. chrysonotus*, however, is much larger, and, like *C. chrysopterus*, differs in habits and voice (Ridgely and Tudor 1989). *C. cela* differs in size, plumage, voice, and has a colonial social system.

Other factors such as foraging behavior and

habitat preference also can be considered in determining species' relatedness (Remsen and Schulenberg 1997). Similarities in habitat use and foraging behavior of *C. sclateri* and *C. koepckeae* support their close relationship. Both are primarily arboreal foragers and occur in similar transitional forest or forest edges near water. Like *C. koepckeae*, *C. sclateri* forages in middle and upper levels of flood-plain forest (Ridgely and Tudor 1989, Servat and Pearson 1991). In one case, *C. sclateri* foraged actively for nectar or insects at flowers 4–10 m above ground in a leguminous tree alongside the Samiria River (Servat and Pearson 1991). J. P. O'Neill (pers. comm.) observed a pair of birds foraging "4–5 m up in *Gynerium* and *Cecropia* at the edge of an Aguaruna-Jivaro garden plot near the edge of the [Cenepa] river." Ridgely and Tudor (1989: 368) classify *C. sclateri* as "apparently rare in canopy and middle levels of forest borders and woodland," where birds foraged in pairs, "well up in trees, often probing into epiphytes and the bases of leaves." Despite these similarities, vocal differences (especially the structural difference of the second note of their primary vocalizations) do not support the suggestion that *C. koepckeae* and *C. sclateri* could be subspecies of one species (cf. Jaramillo and Burke 1999).

Distribution and conservation.—Based on my observations, *C. koepckeae* may be ecologically restricted to narrow rivers, such as those found in headwater regions at foothill elevations close to the eastern slope of the Peruvian Andes. This seems especially evident in the Timpía sightings. Before the sightings of 24 and 29 July 2001, 8 months of fieldwork (spread over 3 years) along the main stem of the Río Urubamba had resulted in no records of *C. koepckeae*. Over this same time period, less than 15 km away, I recorded *C. koepckeae* on 8 of the 11 days I spent up the narrow Río Shihuaniro. In Timpía, the conventional wisdom among community members about *C. koepckeae* (known as *pichócho* in the lower Urubamba dialect of the Matsigenka language) is that it is rarely, if ever, seen down as far as the main course of the lower Río Urubamba.

Between the type locality and the sites of my recent observations, *C. koepckeae* has now been recorded between 300 and 575 m ele-

vation in southeastern Peru. The range or habitat requirements of *C. koepckeae* must be somewhat restricted because, until recent sightings (see below), it had not been observed at the several heavily studied sites in Depto. Madre de Dios (although there were several possible sightings during the 1980s in the Manu National Park area; Collar et al. 1992). Other narrow rivers at similar elevations in the region—for example, the headwaters of the Ríos Alto Manu, Serjali, Paquiría, Mishagua, Cashpajali, Sepahua, Las Piedras, Cujar, Alto Púrus, and Curanja—and possibly those in western Brazil, could provide habitat for *C. koepckeae*.

Based on its habitat requirements, one would expect *C. koepckeae* to occur in the eastern part of the Manu Biosphere Reserve in Depto. Madre de Dios, where appropriate habitat may exist away from the main river. It likely occurs in small numbers at least as far southeast as Boca Manu (12° 15' S, 70° 50' W), where a possible sighting was reported in 1983 (Collar et al. 1992; M. Kessler pers. comm.). Although not particularly well documented, this sighting, along an old branch of the Río Manu, would represent a significant range extension to the east and south of the three confirmed sites discussed in this paper.

Several other recent encounters add to our knowledge of the distribution and ecology of *C. koepckeae*. A specimen of *C. koepckeae*, only the third of its kind, was collected along the pipeline route of the Camisea gas project in Parotori, Depto. Cusco, about 25 km west of Timpía in the upper Río Picha drainage (I. Franke pers. comm.). During September 2001, near the Cocha Cashu Biological Station (11° 51' S, 71° 19' W; elevation ~380 m) in Manu National Park, J. Tobias (pers. comm.) repeatedly observed and tape recorded foraging groups of *C. koepckeae* along a bamboo-lined stream near a site known as Playa Bonita, about 8 km inland from the main stem of the Manu River. During June 2000, P. Hocking (pers. comm.) reported seeing a *C. koepckeae* fly from a "very long" nest along the Río Shambuyacu (a tributary of the Río Púrus), Depto. Ucayali, near the Brazilian border (i.e., relatively near the type locality at Balta). Most significantly, in 1996 D. Lane (pers. comm.) reported having seen a possible *C. koepckeae* near Cushabatay in Depto. Ucayali, several

hundred km from the sites mentioned in this paper. Indeed, if *C. koepckeae* and *C. sclateri* form a superspecies (as suggested by J. P. O'Neill in Jaramillo and Burke 1999), then *C. koepckeae* could occur well north into east-central Peru.

The September 2001 sightings documented with tape recordings from Manu National Park (J. Tobias pers. comm.) offer hope that more will soon be discovered about the ecology of this little-known species. J. Tobias (pers. comm.) reported that three different family groups of *C. koepckeae* (of four, five, and six individuals, respectively) were readily observable along a stream 4–8 m wide in lowland rainforest. During eight visits along a 5-km stretch of the stream over a 4-week period, Tobias recorded the species 17 times, with each family group tending to be found repeatedly along the same stretch of stream. Tobias reported that during 2 months of intensive fieldwork in the surrounding mature, floodplain forest, he never encountered *C. koepckeae* away from the stream: "They were always along the stream itself, never in adjacent forest, and appeared to be restricted to disturbed riverine regrowth containing cane, bamboo, dense creepers, and some *Heliconia* [Heliconiaceae]... They ranged from the low understory to the upper canopy, but spent most time 1–5 m above the ground in dense tangles of bamboo or vines. The species was almost always located by its loud and distinctive vocalizations... The species is not so much skulking as inconspicuous and highly local." These observations support my hypothesis that *C. koepckeae* is ecologically restricted to narrower rivers and the patchy, successional habitats along their margins.

Further research is needed on the foraging ecology and distribution of *C. koepckeae* before its conservation status can be assessed. I have seen and heard it several times near human habitation, where a mosaic of cultivated areas dominated the transitional forest near the river edge. The pattern of low-impact, small-scale agriculture practiced by the indigenous peoples of the lower Río Urubamba region does not seem to be incompatible with the ecological needs of *C. koepckeae*. Most riverine habitats in the aforementioned headwaters regions are still intact, and the Manu Biosphere Reserve and the contiguous indig-

enous reserve to the west of the park may afford the species some de facto protection. Nevertheless, current and proposed petrochemical development in the Camisea and Río de Las Piedras areas may threaten the long-term integrity of *C. koepckeae* habitat in those areas. The conservation measures proposed by Collar et al. (1992:961) for this little-known species state that the first requirement is the identification of "general areas in which some reasonable population exists." My observations have begun to do that, but further exploration is necessary to document more fully the distribution and ecological requirements of *C. koepckeae*.

ACKNOWLEDGMENTS

I thank C. Munn, the Wildlife Conservation Society, and the Conservation Association for the Southern Rainforest (Selva Sur) for supporting my field work. P. H. English supplied the sound spectrograms and made important comments on several drafts. L. Blanco Zamalloa produced the original map, M. P. Gerhart digitized and improved it, and D. Blanco and A. Trepow assisted with the map and figure. W. Mayer, C. Richart, D. Huaman, and S. Russo made comments on the manuscript. W. Schelsky, P. Donahue, and T. Wood's comments on structure were particularly helpful. I thank I. Franke, M. Kessler, P. Hocking, D. Lane, and especially J. Tobias for sharing information about their own encounters with *C. koepckeae*. T. S. Schlenberg, S. L. Hilty, J. V. Remsen, Jr., J. P. O'Neill, and C. Munn provided articles, encouragement, and important comments on various drafts of this manuscript. Special thanks go to J. Gerhart, C. Beier, L. Michael, and the people of Montetoni and Timpfa.

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